Henry Skinner

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The Life History of Euchloe creusa hyantis Edw. (Lepid.: Pieridae).

By KARL R. COOLIDGE, Hollywood, California.

What I take to be the race *hyantis* of *Euchloe creusa* Dbl. is not a common butterfly in Southern California. Especially along the coast is it a rarity. I have taken it once in Santa Barbara County, several times in Ventura County, and on one occasion, February 15, 1923, I came across a small colony disporting about a hilltop in the heart of Hollywood. It is more frequently to be found inland, in the desert and semi-desert regions. The late W. G. Wright formerly took it in considerable numbers about San Bernardino. I know of but several captures on the Colorado Desert, but on the Mohave, provided there has been sufficient seasonal rain to bring forth the plant life, it is quite common, though only for a short period.

On April 18, 1919, I found the butterfly in numbers on the Mohave Desert, about half way between Mohave and Randsburg. A female was observed ovipositing, and a search of the food plants revealed more eggs and larvae in practically all stages, indicating that the species had been on the wing several weeks or more. On the Mohave the food plant is the "Squaw

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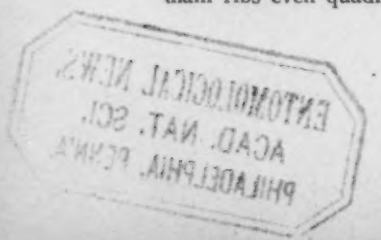
cabbage," *Caulanthus amplexicaulis* Wats., of the Brassicaceae. No doubt, various other crucifers serve as food, as *Caulanthus* does not seem to occur about Palm Springs, on the Colorado Desert, where *hyantis* is occasionally found. Incidentally, the dead stalks of *Caulanthus*, when rustled by a slight wind, produce a sound startlingly like that of the rattling of a rattlesnake, on several occasions causing me to stop abruptly and watch my step.

The eggs are laid mainly on the young buds, though I noted an occasional one on the stems and leaves. So, too, the larvae show a decided preference for the buds and flowers, but will attack any other portion of the plant, lacking these. The larvae are voracious feeders, as can be attested by the following record:

An egg laid April 18.
Hatched April 22.
Passed first moult April 24.
Passed second moult April 27.
Passed third moult April 29.
Passed fourth moult May 2.
Suspended May 6.

As far as I know, there is but the one brood a year, and, without doubt, in dry, unfavorable weather the pupae hold over until the following spring, thus remaining two years in a chrysalis state. But I would not be at all surprised to find *hyantis* in part double-brooded in certain favorable localities. This is true of *ausonides* Bdv., of which a fair percentage of the pupae I have bred emerged in early summer, differing from the vernal generation in being slightly larger and a trifle more yellowed. But what bearing this has on *pseudoausonides* Verity, described as a spring form of *ausonides*, I do not know.

The egg.—Subfusiform, the base broadly truncate, swelling out roundly to the middle, where the greatest width occurs, and thence tapering at first evenly and then rapidly to the summit, which is narrowly truncate. Marked with a series of prominent, sharp, vertical ribs, about every one of which terminates just before reaching the apex. These ribs .1 mm. apart, .02 mm. in thickness at the summit, and numbering seventeen in the one egg examined. Between the vertical ribs the surface is rather deeply concave, glistening and marked with a series of fine straight cross-lines, .02 mm. apart, and forming with the main ribs even quadrate cells. The micropyle in a broad but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shallow depression, .08 mm. in diameter, of a slightly deeper tint than rest of egg. The micropylar rosette composed of a group of rather distinctly defined round cells averaging .015 mm. in diameter.

Color, when first laid, a very pale lemon yellow, becoming more and more orange as the embryo larva develops. Height, 1.08 mm.; width at apex, .1 mm.; width at base, .26 mm.; greatest width, in middle, .48 mm.

Larva, First Instar.—Head .27 mm. in width, well rounded, the median suture but slightly depressed; smooth, except for some scattered minute papillae that give rise to black bristly hairs, .03 mm. in length. Color of head dark chestnut brown, shining.

On the body the usual *Anthocharid* series of papillae in the following arrangement: A supralateral row, situated anteriorly on the segments. A lateral row, placed posteriorly. A suprastigmatal row, just above and a little behind the line of the spiracles. An infrastigmatal series, posteriorly. These papillae prominent, conical, .02 mm. in height and .03 mm. in diameter at base. From them emerge straight black hairs, enlarged at their tips into compressed clubs that support hyaline drops of fluid. These bristles .003 mm. in width at base and .002 mm. at their tips. Those on the first and second thoracic segments are slightly longer than elsewhere, where they measure .08 mm. in length. Also, on the first and second thoracic they project anteriorly, while on the remaining segments they are erect. Spiracles prominent, suboval, crateriform, .02 mm. in diameter, with a fine black ring.

Color of body dull amber yellow. Ventral surface and prolegs concolorous; legs shining golden. Length 1.08 mm.; width at first thoracic .24 mm.; at anal segment .18 mm.

Second Instar.—Head dark green, as before, with a few scattered bristle-bearing papillae giving rise to black hairs. Width of head .64 mm.

Series of papillae on body as before, now .06 mm. in height, with the emerging black bristles .10 mm. in length. In addition, numerous smaller papillae, .015 mm. in diameter and height, from which arise short black hairs .04 mm. in length. Spiracles .035 mm. in width, finely ringed with brown.

Color of body light green to green yellow, quite variable. Length 3.20 mm. Width at first thoracic .48 mm.; width at anal segment .42 mm.

Third Instar.—Head dark green now rather thickly beset with conical black tubercles, .04 mm. in diameter, from which arise stout, blunt, black bristles, .12 mm. in length and .002 mm. in width. Width of head 1.1 mm.

Body papillae as before, of the regular series .08 mm. in height, .06 mm. in width, with the arising bristles .12 mm. in length. The numerous smaller papillae .02 mm. in diameter and height, with their hairs .05 mm. in length. Spiracles .05 mm. in diameter, finely ringed with brown.

Color gray green, variable as to shade. An uneven substigmatal band, averaging .18 mm. in width, and lemon yellow in color. Length 6. mm. Width at first thoracic 1. mm.; at anal segment .80 mm.

Fourth Instar.—Head dark green, as before beset with papillae bearing stout bristles. Width of head 1.40 mm. Body as before, except for increased size of all the papillae and arising hairs. Color of body gray green, varying. The stigmatal stripe now well defined, white in color, .5 mm. in width. Length 12. mm. Width at first thoracic 1.20 mm.; at anal segment 1. mm.

Fifth Instar.—Head dark green, 2. mm. in width, thickly studded with black tubercles, .05 mm. in diameter, from which arise colorless hairs; these tubercles .03 mm. in height, and the hairs that project from them .1 mm. in length.

Color of body dark green, thickly covered with black papillae, always situated, except below the stigmatal stripe, on irregular patches of reddish purple; on the anterior segments these purplish blotches predominate over the ground color. Spiracles .2 mm. in length, pale green. A prominent pure white stigmatal stripe, .6 mm. in width, and edged above by narrow reddish purple stripe. Ventral surface and prolegs grass green; legs gray green. Length 22. mm. Width at first thoracic 2.70 mm.; width at anal segment 2.10 mm.

Finished feeding, the larvae empty their intestines, decrease to 18. mm., and the body becomes almost solidly purplish red. Pupation occurs as in allied species. Practically all the larvae I gathered were parasitized by a species of Tachinid fly, and the only example to attain maturity went into pupation before a more complete description could be made.

The Pupa.—Elongate bent fusiform, tapering very gently toward either extremity. Thickest in the middle, with the palpi case slenderer than the posterior end, .5 mm. in width at its pointed termination. The posterior end truncated. Color pale wood brown, the wing cases a shade darker and flecked, as are all the anterior parts, with numerous fine black points and streaks of varying sizes. A narrow even brownish ventral line, becoming obsolete as the two ends are approached. A slightly wider but disconnected lateral band. Spiracles indicated by faint brownish points. Length 17. mm. Width in middle 3.5 mm.

A Preliminary List of the Ants of Kansas (Hymenoptera, Formicidae).

(Continued from page 43.)

By WM. P. HAYES, Kansas Agricultural Experiment Station.

DOLICHODERINAE.

DORYMYRMEX PYRAMICUS Roger. This is a new record for the state. Specimens (determined by M. R. S.) in the State Agricultural College collection were taken in Trego County.

D. PYRAMICUS var. FLAVUS Pergande. Also a new varietal record. Workers of this variety were taken at Manhattan, May 20. This variety and its specific form (cited above) are recorded in the Wheeler list from the "Southern States."

D. sp. Males of an undetermined species are in the State Agricultural College collection from Riley County, July 22, and October 10, and there are specimens of males from Trego County.

IRIDOMYRMEX PRUINOSUS var. ANALIS André. Specimens of this variety (determined by W. M. W.) were found abundantly at Winfield in 1915, under stones in pasture land associated with colonies of *Solenopsis molesta* Say. In the Tucker list this variety is reported from Lawrence. Specimens have been taken frequently by the writer at Manhattan from April to July in corn fields and in native pasture land.

FORMICINAE (CAMPONOTINAE).

PRENOLEPIS IMPARIS Say. This common ant occurs from New England to California. It was first reported in Kansas by Tucker from Lawrence, where he found males in March and April. His list places the species in the subgenus *Nylanderia* but according to the Wheeler list it belongs in the subgenus *Prenolepis s. str.* Several workers and males are before the writer collected by J. B. Norton, in Riley County, on April 3 (determined by M. R. S.).

PRENOLEPIS PARVULA Mayr. This species spelled "parcula" is found without locality designation in the Crevecoeur list.

P. (NYLANDERIA) VIVIDULA MELANDERI Wheeler. This species adds a new state record to the Kansas list. Specimens (determined by M. R. S.) of males, females and workers are at hand collected by F. A. Marlatt, in Riley County, in May.

P. NIETUS Mayr. Also found in the Crevecoeur list, but is not listed in Wheeler's list of North American ants.

P. (NYLANDERIA) sp. A number of specimens of another species which M. R. Smith was unable to specifically determine

are in the State Agricultural College collection. These were collected by the writer in the vicinity of Manhattan in April.

LASIUS NIGER var. NEONIGER Emery. This species, without varietal designation, occurs in the Bridwell list of Kansas Hymenoptera as *Lasius alienus* Forst. It has been shown to be synonymous with *L. niger*. The varietal name here given (determined by M. R. S.) is new to the state list. Tucker, in his list, cites it from Colorado but not from Kansas.

L. NIGER var. AMERICANUS Emery. This variety has been reported by Tucker from Lawrence where he found males and females in April and in September found males at night.

L. UMBRATUS Nyl. var. Also reported in Tucker's list from Lawrence.

L. (ACANTHOMYOPS) INTERJECTUS Mayr. First reported for the state by Tucker from Lawrence. Specimens are at hand from Manhattan, where winged forms were collected in April.

L. (ACANTHOMYOPS) CLAVIGER Roger. This species, spelled *"clavagers,"* is reported in the Crevecoeur list. It is probably from the vicinity of Franklin County.

L. (ACANTHOMYOPS) LATIPES Walsh. This species was reported for the state by Crevecoeur. Specimens of workers in the State Agricultural College collection were collected at Manhattan, by Popenoe, in October.

L. spp. Undetermined males and females are before the writer from Riley County, collected by Marlatt, Popenoe and Norton. Popenoe's collections were made in June.

FORMICA SANGUINEA subsp. SUBINTEGRA Emery. This species was determined by M. R. Smith. A single worker collected in Riley County by the writer serves as a new state record.

F. RUFA var. AGGERANS. Two workers from Wallace County, collected July 20, in the State Agricultural College collection add this new name to the state list. This species is reported from Nebraska, Colorado and Dakota in Wheeler's list.

F. EXSECTOIDES Forel. Another new state record. Workers collected by the writer in Riley County were determined by M. R. Smith. This species has been called the "Mound-building ant of the Alleghenies," and is quite widely distributed in the northeastern states.

F. PALLIDE-FULVA Latr. Several workers are at hand from Riley County, collected in July and September. M. R. Smith writes in a letter that he has examples of this species from Kansas. So far as can be ascertained, this species has not been previously reported from this state. Its range is the southern states.

F. PALLIDE-FULVA subsp. SCHAUFUSSI Mayr. Tucker re-

ported this subspecies from Lawrence, where he collected a female in July. One worker (determined by M. R. S.) was collected by the writer in Riley County. This species has a northern range.

F. PALLIDE-FULVA subsp. NITIDIVENTRIS Emery. This species has been taken in the state and recorded by Crevecoeur. The writer has workers from Kansas City, Kansas, and from Riley County.

F. FUSCA var. SUBSERICEA Say. Tucker found males of this variety at Lawrence in July. Workers are in the State Agricultural College collection from Riley County, also found in July.

F. SUBPOLITA Mayr. This species, listed as *Formica fusca* Linn. subspecies *subpolita* Mayr, is recorded from Lawrence by Tucker, who found a female in July. There is a possibility of an incorrect determination for Wheeler (1916, p. 599) believes that Mayr's species may have been *F. neogagates* Emery.

F. sp. Undetermined species of males and females of this genus are in the State Agricultural College collection as follows: One male from Riley County, in the Popenoe collection, July 29; one male from Riley County in the Norton collection; one female from Wallace, Kansas, July, 1885; one male from Riley County, July 13, in the Norton collection.

POLYERGUS RUFESCENS subsp. BREVICEPS Emery. This species has not been seen by the writer from Kansas, but Wheeler's list records its range from Colorado to Arkansas and Illinois, and it should, therefore, occur in the state.

P. RUFESCENS subsp. LUCIDUS Mayr var. MONTIVAGUS Wheeler. In a recent letter to the writer, M. R. Smith stated that he had specimens of this variety from Kansas.

CAMPONOTUS MACULATUS var. NITIDIVENTRIS Emery. This species and variety is not found in previous Kansas lists. Four workers are in the Kansas Agricultural College collection collected April 14 in Riley County. Other specimens at hand are from Trego County. It is native to the western states.

C. MACULATUS Fabr. ssp. Specimens without further designation from Riley, Gove, and Cowley Counties were determined for the writer by M. R. Smith.

C. CASTANEUS Latr. This species is listed in the Crevecoeur list without varietal designation. It is found mostly in the Atlantic states.

C. CASTANEUS var. AMERICANUS Mayr. This variety is cited by Tucker with the locality designation "Kansas." The writer has taken workers of this variety (determined by W. M. W.) near Winfield, in September. Specimens are also at hand from

Riley County. Wheeler's list gives the northeastern states as the range of this variety.

C. HERCULEANUS Linn. Cited in the Bridwell list without varietal designation.

C. HERCULEANUS subsp. PENNSYLVANICUS DeGeer. This subspecies is found in the lists of both Bridwell and Tucker. Bridwell's specimens were in the collection of Baker University. Those cited by Tucker were taken at Lawrence, where he found workers in April and June and winged forms in July. Specimens are before the writer from Riley County. This is the common carpenter ant which occurs from Canada to Texas and often becomes a pest by damaging woodwork and infesting houses in search of sweets.

C. HERCULEANUS subsp. PENNSYLVANICUS DeG. var. FERRUGINEUS Fabr. One worker of the variety (determined by M. R. S.) is at hand from Riley County. This variety has not been previously recorded from this state. Wheeler cites its range as from New York to Illinois.

C. FALLAX var. NEARCTICUS Emery. This variety is cited in the Tucker list as *C. marginatus* Latr. var. *minutus* Emery from Lawrence.

C. FALLAX var. MINUTUS Emery. This variety is also cited by Tucker from Lawrence under the species *marginatus*. It is found in the northeastern states.

C. FALLAX var. DECIPIENS Emery. This species is reported by Tucker in a later publication (1913) from Lawrence, where he found males, females, workers and soldiers in a bee hive infested with moths. He further notes that this variety was reported (1906) by himself as *C. marginatus* Latr. var. *decipiens* Emery. Workers (determined by M. R. S.) of this variety in the Kansas Agricultural College collection were taken in Riley County, in March and April. This variety is found from the middle states to Texas.

C. FALLAX subsp. DISCOLOR Buckley. A new subspecies is here added to the state list. Workers (determined by M. R. S.) have been taken by Marlatt in Riley County in April.

C. CARYAE. var. Workers of this species were swept from Polygonum in Riley County by J. B. Norton on September 8. This species (determined by M. R. S.) is not found in previous state lists.

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New Species of Diptera from North Carolina.

By C. S. BRIMLEY, Entomological Division, North Carolina Department of Agriculture, Raleigh, N. C.

Chilosia swannanoa n. sp. (Syrphidae).

♂.—Eyes hairy; facial tubercle large and prominent; hind tibia with a decided emargination on posterior side near apex; third antennal joint longer than broad; face bare.

Black, the third antennal joint dark brown, the legs dark brown, with the following yellow or yellowish, apices of all femora, front tibiae, base and apex of middle and hind tibiae, and first two joints of four anterior tarsi; hind tarsi wholly dusky. All tibiae and tarsi covered with short fulvous pubescence which tends to obscure the ground color. Pile of

body rather plentiful, whitish, except on mesonotum, where it is nearly or quite black, and on frontal lunule, where rather long black hairs are mixed with whitish ones; pleura with whitish pile. There are also black bristly hairs above bases of wings and on sides of scutellum, which latter has also a fringe of white hairs on the posterior margin.

Wings pale sooty, a little more yellowish at base and with stigma yellowish. Calypteres whitish, halteres dark at tip.

Length 9 mm., wing 7 mm.

Type, one male collected by myself at Swannanoa, North Carolina, on September 5, 1924.

Runs in Shannon's key to the genus (Insec. Inscit. Men.,-X-127 [1922]) to *florella,* but has the wings pale fuscous, and the antennae and pile on mesonotum dark.

Odontomerus dorotheae n. sp. (Trypetidae).

Honey yellow, with an oval black spot on each side of scutellum, the apex of abdomen also blackish.

Front broader than either eye, narrowed gradually to opposite antennal base, the face widening below antennae, so that the face and front together are rather broadly hour-glass-shaped. Antennae wholly yellow, the third joint twice as long as broad, rounded at tip; arista long, black, short plumose. One orbital bristle, one vertical and one post vertical.

Thorax with two bristles just before base of wing, one above the same and two pre-scutellars, and one on mesopleura. Scutellum with a pair of apicals. All the femora with spines, there being about four stout spines on the front femur, four on the middle and nine on the hind femur.

Wings yellowish, more so at base, with an apical dusky spot centering on apex of third vein and extending posteriorly to apex of fourth vein and anteriorly about half-way to apex of second; the small and hind cross-veins are also clouded and there is a narrow dusky crossband extending from the fifth vein across the junction of second and third veins to, but not across, the first vein. The veins appear bare under a hand lens, but are microscopically hairy. The anal cell is rounded posteriorly.

Abdomen rather long and narrow, narrower than thorax, the first segment much narrowed at base.

Length 7 mm., wing 6 mm.

Type, a female, taken at Raleigh, North Carolina, August 11, 1923, paratype female, Raleigh, June 11, 1924.

Neuroctena ruthae n. sp. (Sciomyzidae).

Head about as in Cresson's figure of *simplex* (Trans. Amer. Ent. Soc., XLVI, Pl. II, fig. 21), antennae porrect, the second joint short, triangular, the third joint short-oblong, a little longer than broad. First vein setulose from where the second and third veins separate from it, to the very tip. Hind cross-vein about half-way between small cross-vein and tip of fourth vein.

One frontal bristle on each side, two verticals, one post-vertical. Two ocellars. One humeral, two notopleurals, one pre-sutural, two supra-alars, one interalar, two postsuturals, one propleural and three sternopleural bristles on each side. Scutellum with four bristles. Legs without bristles except at extreme apex of tibiae.

Yellow, the abdomen brownish-piceous, strongly contrasting in color with the rest of the body, the last joint of the tarsi and all the hairs and bristles, including the arista, black. Wings yellowish hyaline, the color deepest anterior to the fourth vein, hind cross-vein clouded.

Type: A female taken by myself at Franklin, North Carolina, on May 22, 1923.

Near *N. simplex,* but abdomen is not concolorous with thorax.

Tetanocera vicina nanciae n. subsp. (Sciomyzidae).

Similar to *T. vicina,* but the wings are very much paler, and the fourth vein has no stumps proceeding from it, nor dark spots on it, the small and hind cross-veins alone being clouded.

In *vicina* the fourth vein has one or more small stumps proceeding from it, each of which is marked by a dark spot, and there are other dark spots along the vein without any stumps. In eight Raleigh specimens, including both sexes, there is always present a single stump projecting downward from the fourth vein between the two cross-veins, sometimes there are two, and sometimes also another projecting upward in the same region or one projecting backward beyond the hind cross-vein or one or two before the small cross-vein, while in one the hind cross-vein bears a stump. These stumps are mentioned in Loew's description of *plumosa (=vicina),* and are figured by Cresson in his figure of the wing of *vicina* (Trans. Amer. Ent. Soc., XLVI, Pl. 1, fig. 7),

Type: A male, Bryson City, North Carolina, May 24, 1923; *paratypes,* two males, same date and locality, and one male, Franklin, North Carolina, May 22, 1923, all taken by myself.

Odontomyia annamariae n. sp. (Stratiomyidae).

♀.—Length about 10 mm. Abdomen about as broad as long, measuring about 5 mm. each way. Antennae short, about as long as head or a little longer, first joint about twice second, third about as long as first two combined, composed of five segments, the last two tapering to the blunt, rounded apex. Third vein not forked. Four posterior veins, the anterior a little weaker than the others.

Head with the following pale yellow: whole posterior orbits, anterior orbits to a little above antennae, there sending a bar inward across the front which does not meet its fellow, cheeks, an irregular bar nearly separated into three triangular spots below ocelli, and an irregular V-shaped spot on each side of the face, the V opening downwards, and the following black: a narrow bar from eye to eye across vertex and including ocelli, a similar bar also from eye to eye, across front and connected in middle with black of face, remainder of front and face except as above noted. First antennal joint yellow on basal half, rest of antennae dark.

Thorax wholly blackish above, except a yellow band extending forward on sides from scutellum half-way to suture. Scutellum wholly yellow with two short spines near apex, pleurae largely yellow, pectus dark.

Abdomen blackish, with following pale yellow, linear anterior edge of segment 1, large triangular space on each side of 2, extending from base to apex on sides, and from side to side on posterior edge, thus enclosing a large subtriangular black space which occupies most of the segment at the base and extends nearly to the apex barely reaching it in the middle, a narrow line extending from the sides along the posterior margin of 3 about one-fourth of the way to the middle, a short spur at the posterior angle of 4, and the entire lateral margins of 3, 4 and 5 continuing a little more broadly round the apex of 5. Venter with segments 1 and 2 wholly yellow, 3 yellow in middle, 4 and 5 wholly dark.

Legs with the coxae and femora, except extreme apex of latter, black, extreme apex of all femora yellow, front and middle tibiae with apical fourth black, apical half of hind tibiae black, basal portions of all tibiae yellow, first two joints of tarsi and often part of third, also yellow, rest dusky.

Wings hyaline, a little clouded in the basal cells, and yellowish on the basal half in the costal; veins yellowish, darker near the discal cell.

The abdomen is shorter and broader than in any other member of the genus known to me, and it also differs from all I know in the color pattern of the abdomen.

Type: A female taken on the flowers of *Viburnum prunifolium*, April 11, 1923, by myself.

Eulonchus marialiciae n. sp. (Cyrtidae).

General color dark bluish, but the thorax mostly metallic green above; legs, except the dark coxae, light yellow, very slightly infuscated at the tips of the tarsi. Pile yellowish brown, except on the abdomen, where it is darker and brown.

Eyes hairy, narrowly separated both above and below the antennae. Antennae dark brown with the third joint long, flattened and gradually widening from the base nearly to the apex, rounding off at the apex from the upper to the lower margin. Proboscis straight, about half as long as in Cole's figure of *sapphirinus*, reaching nearly to base of hind coxae. Ocelli three on the usual raised tubercle.

Wings hyaline, the veins dark, second submarginal cell petiolate, the petiole twice as long as in *sapphirinus*, the marginal cell broadly open on the wing margin, the fourth posterior cell is not petiolate at base, but is separated from the second basal by a cross-vein; anal cell closed a little distance from the posterior margin of the wing: the second submarginal cell closed at base not by a transverse cross-vein, but by a thickening and short coalescence of the veins forming its anterior and posterior margins. Each of the tibiae with a short apical spur.

Type: One male, collected on Andrews Bald Mt., Swain County, North Carolina, on June 23, 1923, by Mr. J. C. Crawford.

This species runs in Cole's key to *E. sapphirinus* from California, but is distinguished by the much shorter proboscis, and by the details of venation mentioned above.

The unique types of the species described in this paper will be retained, at least for the present, in the entomological collection of the North Carolina Department of Agriculture, the types of the others will be deposited in the U. S. National Museum.

Predatorial Capacity (Odonata).

At Mud Lake, East Fort Leavenworth, Missouri, July 29, 1919, I captured a specimen of *Sympetrum corruptum* Hagen that was feeding upon another dragonfly *Pachydiplax longipennis* Burmeister, which was fully its equal in size in every respect. These specimens were determined by Dr. C. H. Kennedy.

W. L. McAtee, U. S. Biological Survey, Washington, D. C.

Neocapsus cuneatus Distant in Arizona and Texas, with a Variety Described from Mississippi and North Carolina (Heteroptera, Miridae).*

By HARRY H. KNIGHT, Ames, Iowa.

In his Catalogue of the Nearctic Hemiptera-Heteroptera (1910), Mr. Banks recorded *Neocapsus cuneatus* Distant from Texas. Mr. Van Duzee gives no additional records in his Catalogue of Hemiptera (1917), and as late as 1919 does not recognize the genus from the United States in his keys to genera of Nearctic Miridae (Univ. Calif. Publ., Vol. I, p. 220).

Recently I have received a specimen from Mr. A. A. Nichol, collected June 15, 1924, Santa Rita Mountains, Arizona, which agrees very closely with the figure and description of *Neocapsus cuneatus* Distant (Biol. Centr. Am., Heter., I, p. 438, Pl. 38, fig. 6, 1893). For some time I have also had a mutilated and unplaced specimen of the same species, collected May 31, Chirie Mountains, Arizona. The rather coarsely but shallowly punctured pronotum and hemelytra with transversely striated scutellum, coupled with the color characters, would seem sufficient to recognize *cuneatus* Distant. In the description of the genus *Neocapsus,* Distant mentions the "pilose" character of the pubescence (apparently in the Dipterous sense), but in describing *cuneatus* this character is not mentioned.

The present specimens identified as *Neocapsus cuneatus* Distant, have the dorsum nearly glabrous, the pubescence being very minute, somewhat appressed and scale-like, apparently with one such hair in each puncture on pronotum and hemelytra. The Arizona specimens have the scutellum partly yellow, while a specimen from College Station, Texas (Mar. 24, 1904), has the pronotum, scutellum and cunei orange yellow, with a pale area appearing on basal half of corium.

Specimens are at hand from Mississippi and North Carolina which at first glance would be taken for *Neocapsus cuneatus* with a reddish yellow scutellum. However, close inspection shows the scutellum to be entirely smooth, without a suggestion of the apparently distinctive transversely striated surface of

* Contribution from the Department of Zoology and Entomology, Iowa State College, Ames, Iowa.

cuneatus Distant. The smooth character of the scutellum may be merely a variation or race characteristic of the eastern form, but with such a difference present it seems best to use a varietal name rather than make the mistake of recording a Mexican species from the eastern United States, a form which eventually might prove distinct when biological studies are made.

Neocapsus cuneatus var. **leviscutatus** new variety.

Length 5.5-5.9 mm.; the larger specimen with pronotum 2.5 mm. wide at base and 1.34 mm. in length. Very similar to *cuneatus* Distant, but the scutellum entirely smooth; shining black, pronotum and scutellum orange red, but with subbasal margin of pronotal disk, calli, and anteriorly, except collar, more or less black; front of head reddish, but with black appearing on tylus and just above base of antennae.

Described from a male, May 7, 1915, Agricultural College, Mississippi (G. F. Arnold); author's collection. Two females, June 20, Linville Falls, North Carolina, alt. 4000 ft. (F. Sherman).

The genus *Neocapsus* Distant is very similar to *Horcias* Distant, and, in fact, will prove hard to separate in a key, although the shallowly and sparsely punctate pronotal disk of the former can be pointed out as different from the nearly smooth disk of the latter. In *cuneatus* Distant the pronotum appears shorter and broader, also the head is noticeably shorter than in *Horcias dislocatus* (Say).

Coleoptera of the Pacific Coast, Notes and Criticisms.

By FRANK E. BLAISDELL, San Francisco, California.

Omus reynoldsi Casey, Memoirs, XI, 1924, p. 5.

This form of *Omus cupreonitens* B. & R. has recently been described and based upon a single male specimen, which, on account of its narrow form and subcuneate elytra, suggested the grade of subspecies. Coleopterists of the Pacific Coast are well aware that a certain per cent. of the males of several specis of *Omus* have the elytra gradually narrowing to base and the humeri obsolete. The form under discussion was considered by Mr. Reynolds and myself in our description of the

species (Ent. News, XXVIII, pp. 49-55, Feb., 1917), and a careful perusal of the paper will be elucidative. A selected series of fifty specimens of *cupreonitens* is before me, and in it are seen all intergradations between the males with subangulate and those with obsolete humeri. Small males are found in all species that I have ever collected. Some one hundred and fifty specimens of *cupreonitens* were collected from a small area at the type locality as stated with the description of the species. Many specimens were distinctly coppery in the sunlight when first collected, and all were distinctly shining, hence the name *cupreo-nitens* (coppery-shining), the color ranging from coppery to deep black. *Reynoldsi* is an absolute synonym. It is a form (forma). A *form* is not a taxonomic grade, but a group of individuals of a species, subspecies or variety as limited, selected because they vary in the same way as regards color, sculpturing, size and shape.

Omus blaisdelli Casey, Can. Ent. Vol. XLI, p. 260, Aug., 1909.

The forms described as *ovipennis* and *torvus* by Col. Casey (Memoirs, VII, 1916, p. 14; XI, 1924, p. 11) are absolutely synonymous with *blaisdelli* Casey. They were collected by Mr. Beverly Letcher and myself. The variations of *blaisdelli* were discussed by Mr. Reynolds and myself in our paper on *cupreonitens*. A selected series of thirty-five specimens are before me, showing large, robust females, less robust males and the *ovipennis* and *torvus* forms, as well as intermediates.

Cicindela latisignata Lec.

In Zoe, Vol. III, No. 1, April, 1892, p. 47, the writer published a short paper on the Cicindelidae found in San Diego County, California, in which was discussed the variation in maculation observed in *latisignata*. On one or two occasions in the author's early papers vexatious mistakes were made; they arose from the fact that a number of species had been wrongly identified. As a result of such a determination the narrower marked form of *latisignata* was recorded as *tenuicincta*. The specimens with very broad and confluent elytral markings have quite recently been named *obliviosa* by Col.

Casey. In the writer's boyhood days much time was spent on the ocean and bay beaches about San Diego, with an unlimited opportunity—in those pioneer days—to observe the actions and relations of the several species of *Cicindela* inhabiting the San Diego region.

The results of these studies were included in the paper referred to above. In a large series of *latisignata* at hand all intergradations connecting the narrower and broader marked specimens can be studied. It is very obvious that *obliviosa* Casey is nothing more than a mere form of *latisignata,* and therefore an absolute synonym.

Another and analogous case may be mentioned at the present time—that of *apricoidea* Casey (Memoirs, IV, 1913, p. 32), an immaculate form of *saulcyi.* The author's series of *saulcyi* and *apricoidea* is a complete refutation of even the grade of variety. Specimens of *saulcyi* have been seen which show the normal markings on one elytron and the other immaculate. If an elytron be removed from a specimen of *apricoidea* and held up to the light, the pattern of maculation normal to *saulcyi* can usually be discerned. The pattern simply did not come to the surface during the closing moments of the ontogenesis of the insect. Such a condition may be sporadic in some localities, while in others a larger number of individuals are affected.

The time is not far distant when the status of these forms will be better understood, and as not due to changes in germ plasm, but to environmental or ecological conditions. Check-lists should not be encumbered with the names of forms. These should be left for consideration in current papers or monographs and to their proper recognition in collections. It is not too much to say that most of the maculate species of *Cicindela* have occasional or sporadic immaculate individuals: Note *dorsalis, saulcyi, hemorrhagica, sierra,* etc., and the collection of a series in the region which they inhabit will give all of the intermediate gradations between the maculate and immaculate forms.

Cicindela pacifica Schaupp.

San Diego is the type region for this subspecies of *hemorrhagica.* I have taken it abundantly on the ocean beach at Del

Mar, San Diego County, California. In that locality *pacifica* was not intermixed with *hemorrhagica* (1881). The specimens collected were deep bluish-olive with a sericeous luster and all immaculate, although when an elytron was held up to the light the maculation was more or less discernible. It should be noted that Schaupp (Syn. Cicindelidae of the U. S. of N. Amer., Bul. Brooklyn Ent Soc., Vol. VI, p. 106) states that *pacifica* "occurs intermingled with the type equally numerous on the ocean shore of San Diego, California." My fine series was destroyed by the great earthquake of 1906. Another series has been acquired, but it is not quite the same thing, and at the end of the series the specimens lead to *bisignata* Dokh. and on into *hemorrhagica*. I cannot make up my mind that it is the same as the Del Mar subspecies. At any rate, I consider the true *pacifica* as a valid subspecies. It must, however, be differentiated from the sporadic immaculate form of *hemorrhagica* which occurs wherever the type species is found, be it on the ocean or bay beach, in an alfalfa field, in an interior valley or on the streets of a city. These sporadic immaculate individuals of *hemorrhagica* are not common. They never occur in numbers in any one locality, as do *pacifica* and *bisignata*.

Bembidion suspectum Blais. Proc. Acad. Nat. Sci. Philad., 1902, p. 76, Feb.

Col. Casey in his Memoirs, XI, p. 40, states that this species is identical with and a synonym of *indistinctum* Dej. This opinion is based on a specimen which I sent to him. *Suspectum* is a distinct species as far as *indistinctum* is concerned, and I would be very much aggrieved if I thought that I sent him a specimen of *indistinctum*.

The latter species is one of the most common species of *Bembidion* in the middle coast regions of California, as determined by the late Mr. Hayward and Dr. Van Dyke. In every specimen of my long series of *indistinctum* the microscopical sculpturing of the elytral and pronotal surfaces consists of an extremely fine reticulation; the specimens had not been previously separated by this character. In *suspectum* the sculpturing consists of very fine transverse lines. This form

of sculpturing is seen in the specimens referred to *coloradense* Hayw., where it is constantly present. *Suspectum* belongs to the *dentellum* group rather than to the *indistinctum* section. In fact, it has been suggested that it is not distinct from *dentellum* Thunb.—again I am on the defensive. The latter, according to Col. Casey, does not occur in the United States. The type of *suspectum* came from Oregon, and the species is distributed as far south as San Francisco.

Listrus montanus Casey.

This species was very kindly identified for me by Col. Casey. My original specimens consisted of a pair. A recent examination of the male showed that the third joint of one antenna had a distinct spinule near the apical border, as in the male of *maculosus* Casey. A closer study showed that my series of *montanus* consisted entirely of large and small females and that my series of *maculosus* were all males. The species occurs on willows chiefly, and is quite widely distributed. *Maculosus* is therefore the male of *montanus* and falls into synonymy.

Eulabis crassicornis Casey. VII. Coleopterol. Notices II, 1890, p. 404.

A specimen, supposedly of this species, was given to me by Col. Casey several years ago. It was collected on Catalina Island, the type locality. Upon examination I found numerous stubs of hairs on the declivous sides and apical area of the elytra. *Crassicornis* is described as glabrous and devoid of elytral pubescence. I have since received other and similar specimens from the Island, and everyone has given distinct evidence of abundance of hairs on the elytra. The species is said to be smaller than *laticornis* Casey; the specimens are also smaller than the average specimens of *pubescens* Lec., with which *crassicornis* is identical, and therefore synonymous. Similar specimens occur on the mainland.

Eulabis montanus Casey. Memoirs, XI, 1924, p. 330.

This species has recently been described and defined as "larger and with relatively narrower hind body than *rufipes*." It is based on a single specimen from Eldorado County, California. *Rufipes* has a wide range of distribution, and, besides,

is very variable in size; smallest in the extreme southern part of the State (San Diego County), largest about San Francisco and on the western slopes of the Sierra Nevada Mountains. In a very long series—more than a hundred specimens—the largest specimens taken in the Sierras are no larger than the largest taken about San Francisco.

The males of *rufipes* are all relatively narrower in the hind body, and the pronotum is as wide as or slightly wider than the elytra; these characters are most noticeable in individuals above the average size. The mentum is carinate in the median line, and the crest of the carina is flattened anteriorly and sometimes with a very feeble oval depression. The females are relatively shorter and broader in the hind body, and the carina of the mentum is subacute at the crest. In the male the secondary sexual characters are well marked, the surface of the abdomen being less convex and impressed along the median line.

I see no reason why *montanus* should be considered even as a race, as similar specimens occur about San Francisco. There are all intermediates between the extremes, both in Central and Southern California. *Montanus* is simply a form as defined above under *Omus reynoldsi*.

The following distribution of *rufipes* is taken from my large series: Measurements (extremes).—Length, 4.5 mm. (Poway, San Diego County); 7.5 mm. (San Francisco); 8 mm. (Tuolumne County).

San Diego and Poway, San Diego County, July. San Francisco, October 21, 1906; June 14 and September 20, 1908. Santa Cruz County, June, 1896. Marina, September 14; Pacific Grove, September 6, 1920, Monterey County. Sunol, Alameda County, May 14, 1922. Dipsea, Marin County, June 8. Mokelumne Hill, Calaveras County, June 26, 1921; Davis Meadow, June, 1903. North Fork, Madera County, March 14, 1920, 7000 feet elevation. Tuolumne County, May 15, 1914. Specimens in Dr. Van Dyke's collection were collected in Eldorado County.

Eleodes snowi Blais. Bull. 63, U. S. Nat. Mus., 1909, p. 317.

Fall and Cockerell in the list of the Coleoptera of New

Mexico (Trans. Am. Ent. Soc., XXXIII, June, 1907) express the belief that *lecontei* and *snowi* are one and the same species. It must be admitted that there was some doubt as to the relation of these two species. A single specimen of typical *lecontei* was received from Mr. Frederick Blanchard at the time that the Monograph on the Eleodiini was under way, and it was very carefully compared with specimens of *snowi* from New Mexico and Arizona. I decided that they were not the same species. The solution of the question depended on acquiring a series of *lecontei*. This was accomplished some four or five years ago. Mr. Alfred Champlain while resident in Colorado sent me a series from El Paso County of that State, which proved to be identical with the Blanchard specimen. These specimens verified my opinion regarding the specific standing of *lecontei* and *snowi*. *Lecontei* is much more depressed dorsally and asperately sculptured than *snowi*.

Odonata Notes From North Carolina.

Enallagma pictum Morse. On June 4, 1921, while at Fayetteville, I observed a number of Enallagmas flying about the banks of a small stream, late in the afternoon. A number of these were captured and one proved to be a male of this species. The others were *E. exsulans* and *E. signatum*. Two days later I went to the same place in the middle of the day but only found a single *exsulans*.

Coryphaeschna ingens Rambur. A large nymph taken at Williamston, October 23, 1924. The lateral stripes extend forward on the sides to above the bases of the middle pair of legs and there is a dark stripe on the sides of the head back of the eyes. The labium is very long, extending backward between the hind coxae nearly to their apices. Length 55 mm. The specimen is exactly like Kennedy's figure *(Entomological News*, XXX, 106, April, 1919).

Nasiaeschna pentacantha Rambur. A nymph taken at Williamston, in the same piece of water as the *Coryphaeschna* nymph but two days earlier, October 21, 1924, was wholly black in color, its dark coloration and short labium strongly contrasting with the light colors and long labium of the bigger species. Length 42 mm.

C. S. Brimley, Ent. Div., N. C. Dept. Agr., Raleigh, N. C.

ENTOMOLOGICAL NEWS

PHILADELPHIA, PA., MARCH, 1925.

What Shall Be Done with the News?

In the January number we referred to the rising cost of publication, and asked for comments from our subscribers. One was received. Are you interested in what you want for your money, or do you read our editorials, or do you think that we are best fitted to know how to meet the rising cost of publication? Of course we know how this can be done, but it cannot be done without your help. Our contributors are paying for their illustrations, but we cannot ask them to pay for their contributions yet awhile. We hope it will not come to that. It is you readers, you subscribers, who are now concerned and we think rightly so, as you will see. It is your money we are using. Do you want a smaller journal, or are you willing to pay more for a larger one? About eight years ago we published 480 pages for $2.00 and ended each year with a good balance. Now we are unable to give 380 pages for $2.50 without facing a bad deficit. There are about eight American entomological journals publishing over 100 pages per year, excluding those more strictly economic. These published in 1924 an average of 275 pages for $3.00, or about nine pages for ten cents. These, excluding the NEWS, ranged from eleven to five pages for each ten cents, while we gave you fifteen pages for the same amount. Does not this show you that we are giving you more than any of the others gave? We think it is possible to give you ten pages for ten cents, or 300 pages for $3.00, and still give you what no other American journal is giving, a list of the current literature. How does this sound? How does this fit your pocketbook? The current literature list alone should be worth this to any working entomologist, and the reading matter should be worth that to the others; at least we strive to make it so. We would be pleased to hear from any and all of you who think we are not already giving you $3.00 worth and why. Yes, we want to know this WHY.

E. T. C., JR.

Nathalis iole Bdv. in California. (Lepid., Pieridae).

Here on the Pacific Coast this butterfly is as erratic in its appearances as in the Eastern States. In some seasons about Los Angeles it is quite frequent, and then may entirely disappear for a period of three or four years. Its northern limit in California is probably Santa Barbara, where I took a single

specimen. I have never seen it on the Mohave, but it is thoroughly at home on the Colorado Desert, where there are probably four broods, and possibly several more. The first one issuing about the middle of February, the second towards the last of March, a third about the 25th of April, and another and by far the largest in point of numbers, in early October. Along the coast the food-plant is the alfilerilla, *Erodium cicutarium* (Linn.) L'Her, of the Geraniaceae. On the desert I have found eggs laid on the upper and under surfaces of the leaves, and on the sepals of the Composite plant *Palafoxia linearis*, and the egg may be described as: In shape rounded fusiform, the base a little rounded, thence swelling out roundly to the greatest width, in the middle, and from there tapering evenly to a narrow rounded apex. Surface of egg minutely punctate. Marked longitudinally with faint low ridges, only .003 mm. in thickness, and .02 mm. equidistant. These ribs irregular, coalescing here and there with adjoining ribs, and they are connected by still lower and finer cross lines, so as to form fairly even quadrate cells. Color when first laid a pale orange brown, in forty-eight hours becoming a bright lemon yellow, with the apical portion, to a distance of about .06 mm., altering to a sordid white. Diameter of base .16 mm.; diameter in middle .34 mm.; diameter at summit .12 mm. Height .96 mm.

KARL R. COOLIDGE, Hollywood, California.

Diploplectron in California (Hymen.: Sphegoidea).

In 1893 Fox described *Diploplectron*, a very remarkable genus of fossorial wasps, the only known species being recorded from Colorado and Nevada. In 1899 Ashmead added three species from Colorado, and in 1909 Rohwer described seven more, also from Colorado. One of the Colorado species occurs in Nebraska, but the genus appears to be lacking in the Eastern and Southern states, and has not been recorded from the Pacific coast. However I have before me a California specimen of *D. foxii* Ashm. (described from Colorado), collected by Mr. W. M. Giffard at Summit, Placer Co., 7000 ft., Aug. 24. A genus of eleven species, all of Colorado, with three only known to extend into other states, none of which appears to possess endemic forms, certainly presents a curious problem in distribution. It is still more astonishing to find that there is one more species (*D. kriegeri* Brauns, 1899) described from Port Elizabeth, S. Africa. Possibly many species exist which have not been observed, and when these are known the distribution will not appear so anomalous.

T. D. A. COCKERELL, Boulder, Colorado.

European Species of Eupteryx in the United States (Homoptera; Eupterygidae).

Recent studies have increased knowledge of the occurrence of European species of the genus *Eupteryx* in the United States; that coming to the writer's attention is here recorded.

E. artemisiae Kirschbaum.—Arnold Arboretum, Boston, Mass., swept from *Artemisia* sp., July 27, 1921, Harold Morrison. (U. S. N. M.)

E. concinna Germar.—Woods Hole, Mass., July 9, 1900 (Coll. E. D. Ball).

E. melissae Curtis.—Has already been recorded from Massachusetts, Connecticut, New York, Pennsylvania, and California. Reasons for use of this name (covering *collina* Flor and *quinquemaculata* Baker) will be found in Ent. News, Vol. 30, No. 7, July, 1919, p. 183.

E. stellulata Burmeister.—This is the species redescribed by Sanders and De Long as *Typhlocyba inscripta*, Proc. Ent. Soc. Wash., Vol. 24, No. 4, April, 1922, pp. 99-100, Connecticut.

The distribution suggests that all of these species have been introduced.—W. L. McAtee, U. S. Biol. Survey, Washington, D. C.

Entomological Literature

COMPILED BY E. T. CRESSON, JR.

Under the above head it is intended to note papers received at the Academy of Natural Sciences, of Philadelphia, pertaining to the Entomology of the Americas (North and South), including Arachnida and Myriopoda. Articles irrelevant to American entomology will not be noted; but contributions to anatomy, physiology and embryology of insects, however, whether relating to American or exotic species will be recorded.

The numbers in Heavy-Faced Type refer to the journals, as numbered in the following list, in which the papers are published.

All continued papers, with few exceptions, are recorded only at their first installments.

Papers of systematic nature will be found in the paragraph at the end of their respective orders. Those containing descriptions of new genera and species occurring north of Mexico are preceded by an *.

For records of Economic Literature, see the Experiment Station Record, Office of Experiment Stations, Washington. Also Review of Applied Entomology, Series A, London. For records of papers on Medical Entomology, see Review of Applied Entomology, Series B.

The titles occurring in the Entomological News are not listed.

1—Trans., The American Entomological Society. 4—Canadian Entomologist. 7—Annals, Entomological Society of America. 8—The Entomologist's Monthly Magazine. 10—Proc., Entomological Society of Washington. 14—Entomologische Zeit., Frankfurt, a.M. 18—Internationale Entomolog. Zeit., Guben. 20—Societas Entomologica, Stutt-

gart. 25—Bull., Soc. Ent. France. 26—Entomolog. Anzeiger, Wien. 33—Annales, Soc. Ent. Belgique. 37—Proc., Hawaiian Ent. Soc. 48—Wiener Entomol. Zeitung. 51—Notulae Ent., Finland. 57—Revue Men., Soc. Ent. Namuroise. 75—Annals and Mag. of Nat. History, London. 77—Comptes Rendus d. Seances, Soc. Biologie, Paris. 89—Zool. Jahrbucher, Jena. 101—Biolog. Bulletin, Woods Hole, Mass. 105—Proc., Biol. Soc. Washington. 109—Ann. Hist. Nat. Mus. Nation. Hungarici. 116—Ann. of Applied Biology. 125—Verhandl. Z-B. Gesells., Wien. 130—Ohio Jour. Sciences. 133—Jour. Experimental Zool. 135—Quart. Jour. Microsc. Sciences. 137—Archiv f. Zoologi, Stockholm. 146—Annales, Mus. Nac. Hist., Nat., Buenos Aires. 153—Bull., Mus. Nat. Hist. Naturelle, Paris. 154—Zoolog. Anzeiger.

GENERAL. Barber, G. W.—A study of the cause of the decrease in the infestation of the European corn borer, in New England area during 1923. (Ecology, vi, 39-47.) **Bezzi, M.**—Gli inconvenienti della specializzazione: a proposito di una recente opera sulle galle. (Natura, Milano, xv, 182-94.) **Chahovitch, X.**—Contribution a l'etude de l'immunite chez les insectes. (An. Soc. Linn., Lyon, 1923, 94-5.) **Frank, Dr.**—Zwei steckenpferde. **14,** xxxvii, 64. **Heikertinger, F.**—Wie baut man eine bestimmungstabelle? **48,** xli, 141-58. **Hoffman, A.**—Schultz vor unreellen elementen. **26,** v, 5-6. **Lovett, A. L.**—Obituary notice. **7,** xvii, 355-6. **Macgregor, M. E.**—Special apparatus and technique for the study of mosquitoes and other aquatic insects. (Parasitology, xvi, 388-97.) **Meissner, O.**—Insektenpsychologie. **14,** xxxviii, 55-6. **Oberthur, C.**—Obituary **14,** xxxviii, 57-8. **Weiss, H. B.**—Notes on the ratios of insect food habits. **105,** xxxviii, 1-4. **Wheeler, W. M.**—Courtship of the calobatas. The kelep ant and the courtship of its mimic, Cardicephala myrmex. (Jour. Heredity, xv, 485-95.)

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SPECIAL NOTICES.

Coleoptera collected by the Katmai expeditions. By E. C. VanDyke, Nat. Geogr. Soc., Contributed Tech. Papers, Vol. 2, No. 1, 26pp. This paper describes a number of new species, and copies can probably be secured from the publishers, or from the author.

AN INTRODUCTION TO ENTOMOLOGY. By JOHN HENRY COMSTOCK, Professor of Entomology and General Invertebrate Zoology, Emeritus, in Cornell University. First complete edition. Third edition of Part I. Ithaca, N. Y. The Comstock Publishing Co. 1924. 8vo, pp. xix, 1044, 1228 figs. Price $6.00.

This, the largest single text book in its field which America has yet produced, is divided into two parts: Part I, The Structure and Metamorphoses of Insects, pp. 1-205; 220 figs.; Part II. The Classification and the Life-histories of Insects, pp. 207-990, 1008 figs. Part I first appeared under the same title as the present book in 1888; a second edition, entirely rewritten, came out in 1920 and was noticed in the NEWS, vol. xxxi, pages 208-209. Now the third edition of Part I is incorporated in the volume under review. While it is on many pages identical with the second edition, nevertheless, as stated in the preface, "some very important changes have been made in the text." Some of these relate to the paragnatha (p. 43 and fig. 54), the superlinguae (p. 47), a new figure 61 on p. 50, and the transfer and incorporation of the bibliography into a much longer list on pp. 991-1010.

Part II corresponds in scope to the 600 pages of the fourth edition of the author's *Manual*, and with 49 lines of type to a wider page form, as against 36 in the older work. The number of groups recognized as orders is increased from 19 to 25, the promotions to this rank being the Collembola, Zoraptera, Embiidina, Anoplura, Homoptera and Strepsiptera, while the name Thysanoptera supplants that of Physopoda. The serial arrangement is quite different from that in the *Manual*. The detail in which the different groups are treated varies, sometimes to one's surprise; the numbers of pages devoted to the larger orders are Orthoptera 40, Hemiptera 43, Homoptera 66, Coleoptera 82, Lepidoptera 202, Diptera 104.

Hymenoptera 117. The classification of five of these has been changed but little, as compared with the *Manual,* although, in passing, the separation of the Anthomyiidae as a superfamily from the other Calyptratae seems remarkable to a nonspecialist in the Diptera. The Coleoptera and the Hymenoptera on the other hand are markedly altered; in the former Leng's *Catalogue* is followed, while in the latter "the sequence of the families and the groupings of these families into superfamilies . . . is that recently worked out by Messrs. J. C. Bradley, S. A. Rohwer and J. Bequaert." In the matter of generic and specific names, those of Hübner's *Tentamen* are accepted, those of Meigen of 1800 are rejected. It is astonishing that no reference is made to the human diseases carried by the Anoplura.

This new *Introduction* is a more technical book than the old *Manual;* it contains fewer passages suggestive of "nature study," although many of this character are preserved without change, such as those on the flight and colors of the Sphingidae (p. 656). The subdivisions of the families are given in much greater detail. There are many new and interesting illustrations.

Unquestionably this volume will be of the greatest service to workers in entomology. It represents the culmination of its distinguished author's long career as a teacher in this field, and its graceful dedication, "To my old students whose youthful enthusiasm was a constant inspiration," will be highly appreciated by those to whom it "is affectionately inscribed."

P. P. CALVERT.

Jean Henri Fabre and Eleanor Ormerod.

Admirers of Fabre will be interested in the article "Glimpses of the 'Insects' Homer" by Pierre Julian, published in the "Living Age" (Vol. 323, No. 4194, Nov. 22, 1924). The paper, which first appeared in the "Mercure de France" August 15, 1924, the above being a translation, consists for the most part of six hitherto unpublished letters written between 1880 and 1892 by Fabre to one of his former pupils, M. Henri Devilario.

In the "Dial" for December, 1924, Mrs. Virginia Woolf has written an impressionistic story or sketch entitled "Miss Ormerod," based on the "Life of Eleanor Ormerod" by Robert Wallace Murray, 1904. Entomologists who are familiar with the life of Miss Ormerod will appreciate the sketch after penetrating Mrs. Woolf's choppy and unusual style.

HARRY B. WEISS, New Brunswick, New Jersey.

OBITUARY.

A. H. FASSL-TEPLITZ, in 1922, near Manaos on the Amazon, exhausted by his activity as a collector, fell a victim to the fever of this deadly climate.

Fassl was one of the best qualified and most talented collectors who worked in the tropics. By his special methods of attracting and catching insects, methods which he kept secret jealously, he succeeded in obtaining species hitherto unknown, such as the rare females. His chief aim was to enrich his own unparalleled collection, in which only the finest specimens were allowed to figure. He also caught less rare species that had been till then neglected by collectors in the tropics. His collection has in part been consulted by the authors of the "Seitz" works, which contain types, co-types, rarities and single females. A most interesting narrative of his travels has been published in book form.

In the treatment and classification of the results of his search he was assisted by the following gentlemen: Bastelberger, Boullet, Dognin, Draudt, Fruhstorfer, Jordan, Neustetter, Pfeiffer, Pfitzner, Rocher, Seitz and Weymer.

The collection which he made in his first two journeys included the following Lepidoptera:

	Specimens	♂	♀	Species
Papilio	408	312	96	127
Danaidae and Ithomiidae	1370	700	670	240
Satyridae	1400	...	...	270
Brassolidae	245	147	98	90
Morphidae	95	80	15	40
Nymphalidae (partially)	900	700	200	270
Prepona (blue) ..	70	50	20	18
Erycinidae	1400	930	470	400
do. Amazonas	100	60	40	...
Sphingidae	140	118	22	94

The Satyride collection, made by Fassl, is especially interesting, as it contains a long series of different species, including insects found only at high altitudes, that are lacking in the collections of other workers in the tropics. Weymer had recourse to this collection when working at the Seitz-manual wherein he describes 30 new species and varieties, and 20 hitherto unknown.—(From Staudinger & Bang-Haas, List No. XIII, December, 1924.)

EXCHANGES

This column is intended only for wants and exchanges, not for advertisements of goods for sale. Notices not exceeding three lines free to subscribers.

These notices are continued as long as our limited space will allow; the new ones are added at the end of the column, and only when necessary those at the top (being longest in) are discontinued.

Will exchange lepidoptera of Pennsylvania for those from other parts of the continent. Frank H. Chermock, 1308 Tell Street, N. S., Pittsburgh, Pa.

Correspondence invited from all those interested in Hungarian insects; Coleopt., Lepidopt., Hymenopt., Hemipt., etc.—Prof. Charles Sajo, Oerszentmiklos, (Komitat Pest) Hungary.

Have a number of pamphlets and books on N. A. and exotic Cerambycidae. Will exchange these for certain families of Heteroptera and Tabanidae. G. Chagnon, P. O. Box 521, Montreal, Canada.

Buprestidae.—Will determine and exchange Buprestidae of the world and exchange separata on this family. Dr. Jan Obenberger, Prague II., Václavské námêsti 1700, Museum, Czechoslovakia.

Wanted—Connection with collectors who can furnish me early in the fall living and hibernating pupae of western and southern Papilio and Saturnidae and allied groups. Fertile eggs of Apanteris and Catocala also desired. Max Rothke, 1841 E. Elm St. (R. D. 2), Scranton, Pa.

Wanted—For cash or exchange. Living pupae of butterflies and moths, especially Papilionidae, Sphingidae, Saturnidae, Ceratocampidae. Perfect specimens of the rarer species of Papilionidae, Sphingidae, Cossidae, Hepialidae, Sesidae. The Kny-Scheerer Corporation of America, Department of Natural Science, 119-125 Seventh Avenue, New York, N. Y.

Harvestmen. Will be glad to determine Phalangids from all parts of North America, especially from the South and West. Should be preserved in 90% grain alcohol. C. R. Crosby, Roberts Hall, Ithaca, N. Y.

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Wanted—Living pupae of Actias luna, Hemileuca maia and Basilona imperialis.—Mrs. Robert Milde, Lewiston, Minnesota.

Wanted for cash or exchange, good, healthy living pupae of **T. imperialis.** Must be of good size.—A. J. Potter, East Killingby, Conn.

Wanted—Canadian Entomol, Vol. 2 (1869) to 8 (1876); Vol. 17 (1885), Nos. 5, 9; Vol. 18 (1886), No. 3; Amer. Entomologist, Vol. 1 to 3 (1868-1880); Zoe, Vol. 5, No. 12; Proc. Ent. Soc. Washington, Vol 1 (1899) to 5 (1903); all in exchange for **Cetonides** and **Longicorns** from New Guinea or other countries. Also entomol. literature could be given. Address, Deutsches Entomol. Institut, (Walther Horn), Gossler Str. 20, Berlin-Dahlem, Germany.

I will collect Coleoptera and Lepidoptera in southwest Arkansas for those so interested.—Miss Louise Knobel, Route 2, Box 125a, Hope, Arkansas.

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